



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/909,581	07/20/2001	Nathan R. Brown	500200.02	3036

27076 7590 11/04/2003

DORSEY & WHITNEY LLP  
INTELLECTUAL PROPERTY DEPARTMENT  
SUITE 3400  
1420 FIFTH AVENUE  
SEATTLE, WA 98101

EXAMINER

GRANT, ALVIN J

ART UNIT

PAPER NUMBER

3723

DATE MAILED: 11/04/2003

13

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/909,581

Applicant(s)

BROWN, NATHAN R.

Examiner

Alvin J Grant

Art Unit

3723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-87 is/are pending in the application.
- 4a) Of the above claim(s) 2,3 and 14-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-13 and 60-87 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3,4,6. 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 4-7, 9-13, 60-67, 69, 70-76, 78-84, 86 and 87** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagahara et al. '375 in view of Chen et al. '968.

Referring to **claims 1, 4, 7, 12, 13, 60, 61, 69, 71, 72, 78, 79, 80, 86 and 87**, Nagahara et al. discloses a carrier for supporting a microelectronic substrate relative to a planarizing medium during planarization of the microelectronic substrate, the carrier comprising: a support member; and a flexible, membrane adjacent to the support member, the membrane having a first portion with a first thickness and a second portion with a second thickness greater than the first thickness, the first portion of the membrane being aligned with a first part of the microelectronic substrate when the membrane engages the microelectronic substrate, the second portion of the membrane being aligned with a second part of the microelectronic substrate, the membrane being configured to apply a first force to the substrate when the membrane engages the microelectronic substrate; the second portion of the membrane being configured to apply a second force to the substrate when the membrane engages the microelectronic substrate; the substrate being held stationary with respect to the membrane; the membrane has a first surface facing a generally flat surface of the support member and a second surface facing opposite the first surface toward the microelectronic substrate, the first surface being generally in direct contact with the flat surface of the support member; the second portion is disposed radially inwardly from the first portion; the first and second portions are adjacent to each other; the first and second portions of the membrane are radially disposed relative to each other and an intermediate thickness of the membrane varies in a generally continuous manner between the first thickness and the second thickness; the membrane having an upper

Art Unit: 3723

ply adjacent to the support member, and a lower ply depending downwardly from the upper ply (column 6, lines 30-35). Nagahara et al. as described above does not specifically disclose a compressible membrane. Chen et al. discloses a carrier head comprising a compressible membrane so as to absorb the shocks that are generated on the substrate during the polishing process. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the membrane of Nagahara et al. flexible as taught by Chen et al. so as to absorb the shocks that are generated on the substrate during the polishing process (see Figs. 1 and 2).

Referring to **claims 5, 6, 10, 11, 62, 63, 64, 65, 70, 73, 74, 81 and 82**, Nagahara et al. as modified does not specifically disclose the shapes and dimensions of the membrane. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have used the shapes and dimensions of the membrane that is necessary to effectively perform the CMP process, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Referring to **claims 9, 66, 67, 75, 76, 83 and 84**, Nagahara et al. as modified does not specifically disclose that the membrane is made out of neoprene and silicone. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the membrane of The modified Nagahara et al. out of neoprene and silicone, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

**Claims 8, 68, 77 and 85** are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagahara et al. in view of Chen et al. and in further view of Roberts et al. '268

The modified Nagahara et al. is described above. Nagahara et al. as modified does not specifically disclose a membrane made by injection molding. Roberts et al. discloses silicone rubber polishing pads made by injection molding so that the physical properties can be fine tuned. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have made the membrane of the modified Nagahara et al. by injection molding as taught by Roberts et al. so that the physical properties could have been fine tuned.

***Response to Arguments***

Applicant's arguments with respect to claims 1, 4-13, and 60-87 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alvin J Grant whose telephone number is (703) 305-3315. The examiner can normally be reached on Mon-Fri 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail can be reached on (703) 308-2687. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1184.

ajg



Joseph J. Hail, III  
Supervisory Patent Examiner  
Technology Center 3700